

Ultra-Violet VooDoo (integration by parts) with a Table

The application of

$$udv = uv - \int vdu$$

is to reduce an integral of the product of functions into a one involving a simpler integral. This process might require more than one step, so the tabular method is very popular organized approach to doing this “integration by parts”

1. $\int xe^x dx$

2. $\int x \sin x dx$

3. $\int x \ln x dx$

4. $\int x \cos(3x) dx$

5. $\int \frac{\ln x}{x^5} dx$

6. $\int \arcsin(3x) dx$

7. $\int \ln x \, dx$

8. $\int 2x \arctan x \, dx$

9. $\int x^2 e^{3x} dx$

10. $\int x^3 \ln(5x) dx$

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